DETERMINING FINANCIAL RISK OF GREEN BUILDING INDUSTRY IN MALAYSIA

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DETERMINING FINANCIAL RISK OF GREEN BUILDING INDUSTRY IN MALAYSIA

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A thesis submitted in fulfillment of the requirement for the award of the Bachelor’s Degree of Technology Management (Construction)

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JANUARY 2018
I hereby declare that the work in this project is my own except for quotations and summaries which have been duly acknowledged.

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ASSOC. PROF. DR. GOH KAI CHEN
DEDICATION

For my beloved father and mother,

Thank you for your encouragement and support.

For my supervisor, Assoc. Prof. Dr. Goh Kai Chen,

Thank you for your support and guidance.
ACKNOWLEDGEMENT

First of all, I would like to express my sincere gratitude and appreciation to my supervisor of this project, Assoc. Prof. Dr. Goh Kai Chen for all the advices, support and guidance given throughout the journey towards the completion of my final year project. This project was able to run smoothly and successfully with useful advices from supervisor who enlightened me all the time. A special thank was directed to him for the precious time spent on guiding me in this project.

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Moreover, I would like to express my appreciation to the ten development companies of NRNC green building in Malaysia for the cooperation given during the data collection process. The permission given by the ten companies to allow their employees to involve in the interview is crucial for the data collection process to be completed successfully. Next, a special thank to all respondents who were willing to answer the interview questions.

Finally, appreciation also for my friends and course mates who were providing assistance and moral support during the research process. Thankful for the information regarding this research have been provided by them. I was able to get through the hardest time in doing this with their valuable supports at the back. Appreciation also directed to anyone who involved directly and indirectly towards the completion of this project.
ABSTRACT

“Green building” concept had adopted in construction project is to achieve lower lifecycle costs, contribute to the protection of the environment, attenuate the impact of global warming and achieve increased building value or marketability. Financial risk is always faced by green building projects in Malaysia. The research objectives is to determine the main risk factor of financial risk in green building project and to determine the effective strategies to manage the financial risk in green building project. The scope of this study cover the non-residential new construction green building with GBI certification in Malaysia and respondents of this research are the members of organization who develop those green buildings. The data collection method of this research is interview through email and Google Docs. Data analysis methods of this research are deductive approach and thematic content analysis. For first objective, the three main factor of market risk are related with the high price of resources. Management is the key point that cause credit risk. Besides, experience and performance of labour is the main cause of operational risk. Last, performance and marketing management are the main cause of liquidity risk. For second objective, answers of respondents mention that the themes of risk acceptance include risk level smaller that limit, no solving method and spend extra money. The themes of risk avoidance include practice avoidance are prevent risk before it occur and solve risk after it happen to avoid impact of risk. The themes of risk transference include contractor, supplier, insurance company, faults of third parties and had insured for the project. The themes of risk reduction involve high probability, ineliminable and large impact risk.
ABSTRAK

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Construction industry is a significant and major sector in develop economy of a country. In Malaysia, the percentage of GDP from construction industry is very high. Construction industry also bring many benefits to social and help to increase quality of life. It is because it provide buildings, facilities and employment opportunity to people. In the other hand, construction industry is a high risk and challenging industry. There are many types of risks exist in this industry and different types of risk management is necessary to manage the risk.

Construction industry also bring a lot of hazard to environment. Extraction, process, transportation of raw materials and the construction and operation of a building facility in construction industry bring adversely impact on environment. This impact has resulted in people realize the importance of "green building" and focus on development of “green building”, which can be defined as “building with an ecologically sustainable focus”.

Nowadays, green building become a popular topic in construction industry of all country. Many developers and government are focus on this topic because it bring a lot of advantages and benefits to environment. During the phases of design and implement a construction project, the most prevalent motives for construction companies to pursue “green building” principles is to achieve lower lifecycle costs, contribute to the protection of the environment, attenuate the impact of global warming and achieve increased building value or marketability (BCI, 2014a).
In green construction industry, various types of risk will occur in all phases. Financial risk is the most critical risk compared with other risks. It can influence the success of a project directly. Usually, investor will emphasize on estimate and evaluate the probability of financial risk to make a decision of whether to invest or not. The three major causes of financial risk in construction projects are credit interest rate, currency, and liquidity (Borghesi & Gaudenzi, 2012).

1.2 Research Background

Green building can be defined as increasing the efficiency of resource use, such as energy, water, and materials while reducing building influence on human health and the environment during the building’s lifecycle, through better siting, design, construction, operation, maintenance, and removal. The design and operation of Green Buildings must achieve its objective which is to reduce the overall impact of the built environment on its surroundings (GBI, 2014). In Malaysia, the development of green building industry is continuous and there have been dramatic rises in green building activity over six years from 2008 to 2014. It increased from 30% to 83% and let Malaysia become the top three in South East Asia (BCI, 2014 b).

Risk is a common phenomenon in construction projects. It should be considered in the planning of a project because it covers all future occurrences which may have a negative influence on the project (Furlong et al., 2017). Risk management can be described as a knowledge-intensive process in all construction projects. After the determination of possible risks through risk evaluation exercises based on specialty knowledge and available design information, risk prevention or risk management can be implemented (Ding et al., 2016). Research shows that skill and knowledge which are obtained from experience are important for practical risk management (Han et al., 2008).

Cost is a critical element in green building projects. Compare the total cost of green construction with conventional construction, people can find that it is very expensive and the major contribution cost is product, transportation, and design (Mao, et al., 2016). Definition of financial risk is probability of loss inherent in financing methods which may impair the ability to provide adequate return. Financial risk is a critical and serious factor in companies or project success and it can
lead to distress or bankruptcy. For construction companies, avoid financial risk is an important tasks and it can be achieve by using derivatives which dependent on skill and accuracy of predictions (Chen et al., 2010).

Financial risk management is a process which include financial planning, financial control, cost administration and records. Professionals should have knowledge and ability to manage the financial risk in construction project. Risk identification and evaluation is necessary for opted suitable strategic and response (Purnuș & Bodea, 2015).

1.3 Problem Statement

Money and cost is the most critical element in construction projects which can influence the success of a project. There are various types of risks will be faced by green building projects, but the most frequent and prevalent problems in green building projects is financial problem. Therefore, financial risk can be described as a certain risk of all types of construction projects. However, compare with conventional construction project, there are more factors cause green building projects face financial risk. Besides, according to several journals and reports, the financial risk is stated as the top and main risk for green building industry.

Majority of researches show that the financial is the main risk in green construction project. In South East Asia, the largest challenges to pursue green building concept were the additional costs of building materials, the cost of the certification process, the extra time and expenditure required to investigate suitable materials, and the extra time and costs needed to undertake necessary training (BCI, 2014b). Moreover, in the report of BCI (2014b), the top five reasons of Malaysia didn’t involve in green building project was show as following:

1. Higher costs of building materials.
2. Additional time and cost to research materials.
3. Additional time and costs for additional training.
4. Additional time and cost of documentation.
5. Additional time needed at design stage.
Through the report we can know that there are four reasons from the top five ranking are related to cost which means the impact of financial risk is high.

According to the study of Zhao et al. (2016), respondents agreed that the most critical risk group in Singapore’s green projects is financial risk and the most common factor from 28 risk factors is inaccurate cost estimation. Besides, a study based on green building development found that cost problems is the most important risk in perspective of supply chain (Zou & Couani, 2011). Furthermore, research of Rafindadi et al. (2014) outlined the financial resources is the top risk for all stakeholders in construction phase. The research concluded that the top five critical risk in green commercial building projects covered “Inflation” and “currency and interest rate volatility worsened by the import of green material” (Hwang et al., 2017).

The main reasons of developers, architects, builders and subcontractors from Australia and New Zealand opted not to adopt ‘green building’ principles in their projects is higher cost of building materials, additional time and cost of documentation and additional time and cost to research materials (BCI, 2014a). Compare the selection of respondents in 2008, 2012 and 2015, there have two challenges from eight highest selections are related to financial which is higher perceived first cost and access to capital. Higher perceived first cost is always the top challenge of increase green building project in the three years (Buckley & Logan, 2016). Higher first cost and split between capital expenditure and operating cost saving are including in the top three challenges of increase green building project (McGraw-Hill Construction, 2013).

Financial risk occur in green building project must be manage because it can lead to unsuccessful of that project. Identifying the probability of financial risk can help to manage the risk by planning an accurate financial reserves size for unforeseen events (Dziadosz et al., 2015). Managing financial and economic risks is important because these risks will bring adversely influence on the cash flow, endanger a project's viability and limit profitability. Types of financial and cost risk will be faced by developer and consultant are show in the research to let people know which strategies can be adopted to manage the risks (Ling & Lim, 2007).
1.4 Research Question

Regarding to the problem statement of this study, there are two research question have been carried out.

a. What is the main risk factor of financial risk in green building project?
b. What is the effective strategies that can be used to manage the financial risk in green building project?

1.5 Research Objective

There have two objectives of this research as following:

a. To determine the main risk factor of financial risk in green building project.
b. To determine the efficiency of strategies to manage the financial risk in green building project.

1.6 Scope of Study

The non-residential new constructions (NRNC) green building projects in Malaysia have been chosen as study scope of this research. The information from Green Building Index show that there are 37 non-residential new constructions (NRNC) have been obtain GBI certification and it is the greatest number compare with other categories of green building. The respondents of this research is developers who were involve in NRNC green building project which have 26 organizations or companies. Developers had been chosen because they are directly related to financial aspect of a
construction project and decision maker in financial decision. Interview is the method which was chosen to get the information and data. The interview will be conduct by using e-mail.

1.7 Expected Outcome

This study is carry on to achieve the two objectives which associated with financial problems in a project. This study is expected to reduce the phenomenon of financial risk in green building industry and improve skill of manage these risks. The result of this study can be referred by clients, contractors, designers, engineers and other consultants in green building industry to improve their work performance. Therefore, it should have some positive impacts to green building industry. This study can also help stakeholder to avoid or reduce financial risk occur in green building projects. Furthermore, the result of this study can be the reference to people who face financial risk in construction project and suggestion of ways to deal with these risks are given. Through this study, the knowledge about financial risk in green building industry and way to manage it will increase. Besides, this study is important to help people who want to do research in this area by giving some basic knowledge and concept of financial risk. The result of findings can improve the realization and awareness of people who interested in financial risk field.

1.8 Methodology

A process are used as methodology of this study to achieve the objectives. The process to execute the research is divided into five stages as following:

Stage 1: preliminary study
First, issue which associated with the topic of this study have been study from several reading materials such as journals, books, articles, reports and newspaper. In this stage,
problem statement, scope, objective and significant of study can be completed by using the current issue from reading material.

Stage 2: literature review
In this stage, information, document and literature about financial risk in green building were collected to carry out this study. The information were acquired from journals, research papers, articles, books, seminar papers and internet. Through the information, some important knowledge regarding the topic can be obtained, such as factors of financial risk, strategies to manage financial risk and types of financial risk management.

Stage 3: research methodology
Data collection of this study will start after identify and determine information and issue. This stage is use get data from respondents to know the real factor which can cause financial risk in green building industry. In this study, the research method use to obtain data is qualitative data collection method. Interviews will be conducted to get data related with financial risk in green building project from respondents. The information from stage 1 and stage 2 can be used to design the questions of interview.

Stage 4: data analysis
The data collected by using interviews was analyzed in this stage to get the result of this study. Data analysis is a process of transforming, modelling and evaluating data. The result from data analysis can help to identify the main financial risk factor in green building project and strategies to manage it. Data of this study was analyzed by using deductive approach and thematic content analysis.

Stage 5: conclusion and recommendation
This stage is used to conclude this study and ensure that result will meet the objective of study. Data, information and result of finding had been written into this part. Besides, suggestion for topic in further research had been given.